

Catalog

Categories: [AIR](#) / [Bombs](#) / [Atomic bombs and charges](#) / [AN602](#) / [product 602](#) / [Tsar Bomba \(1961\)](#) /

★★★★★

The task of designing the bomb body and its parachute system was significantly simplified for KB-11 by the fact that the bomb body had been previously developed by NII-1011 (for the "202" product, *see below*).



Model of the AN602 thermonuclear bomb in the museum

Preparation for testing (autumn 1961) : the tests were planned to be carried out by dropping a bomb from a carrier aircraft onto a testing ground on

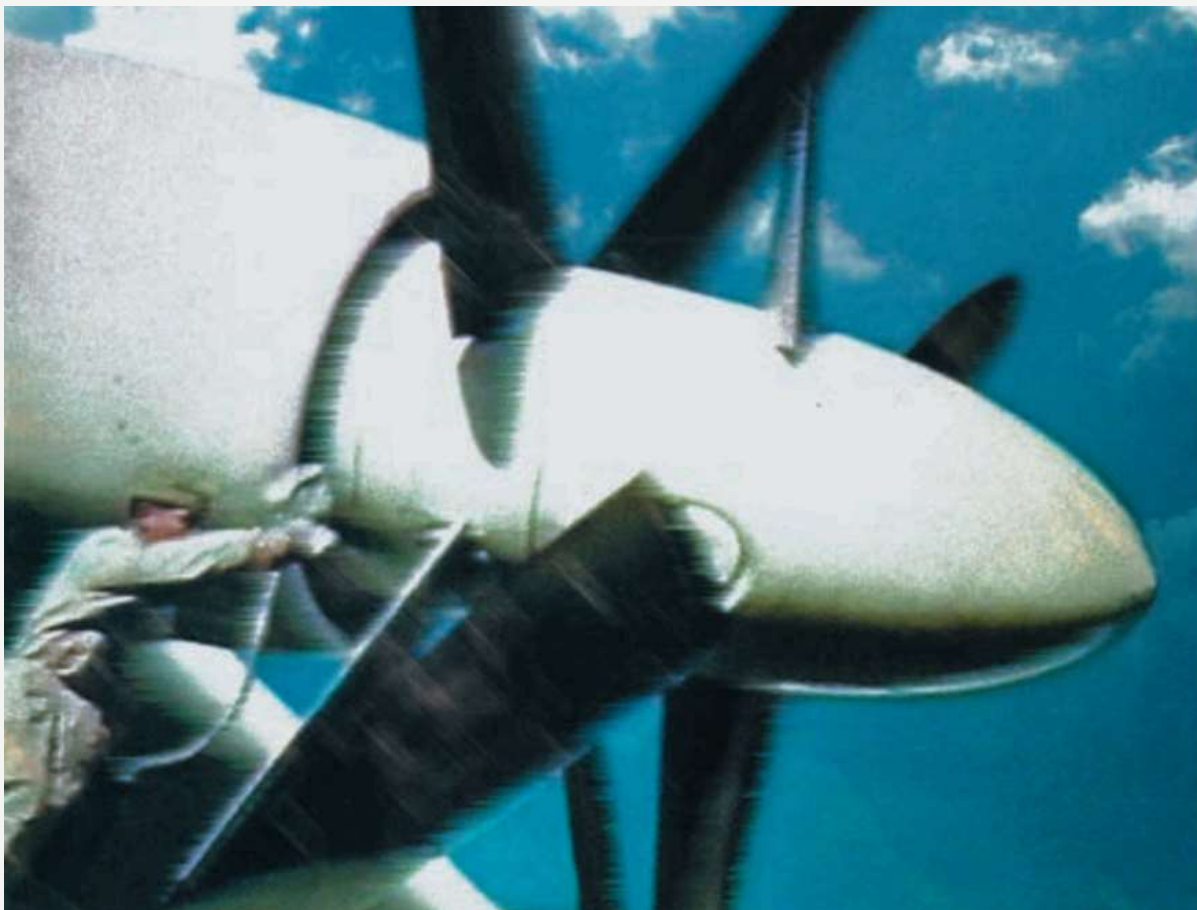
- 📁 AIR
 - 📁 Bomber
 - 📁 Fighters
 - 📁 Transpc
 - 📁 Special
 - 📁 Helicop
 - 📁 UAV
 - 📁 Air-to-a
 - 📁 Air-to-g
 - 📁 Aircraft
 - 📁 Aircraft
 - 📁 Unguide
 - 📁 Aircraft
 - 📁 Bombs
- 📁 Atom
 - 📄 Nu
 - 📄 Th
 - 📄 RC
 - 📄 RC
 - 📄 prc
 - 📄 RC
 - 📄 RC
 - 📄 RC
 - 📄 RC
 - 📄 RC
 - 📄 RC
 - 📄 RC
 - 📄 RN
 - 📄 8U
 - 📄 24
 - 📄 40
 - 📄 AN
 - 📄 (19
 - 📄 8U
 - 📄 RY
 - 📄 RN
 - 📄 9U
- 📁 High (HEA)
- 📁 Aviation
- 📁 EARTH
- 📁 WATER
- 📁 SPACE
- 📁 Personaliti
- 📁 News and

DISCUSSION OF

Novaya Zemlya Island. The superbomb was developed and manufactured in record time in two copies: a control article (for a dress rehearsal of the aircraft crew, the range's measuring systems) and its combat version. Understanding that testing the superbomb would worsen the ecological state of the northern regions, primarily the Scandinavian countries, it was proposed to test a charge that in its "clean" version would be 50% of the maximum power (i.e. 50 Mt). A large number of serious innovations were used in the design of the superbomb itself and its charge. The powerful thermonuclear charge was made according to the "bifilar" scheme: for the radiation implosion of the main thermonuclear block, two thermonuclear charges were placed on both sides (front and back) to ensure synchronous (with a difference in timing of no more than 0.1 μ s) ignition of the thermonuclear "fuel". KB-25 (VNIIA) modified the serial automatic detonation unit for this charge.

The calculations performed on the computer seemed insufficient for A.D. Sakharov. "Two days before sending the product to the testing ground, at 8 o'clock in the evening, Sakharov came to the workshop, approached the product (the bomb casing was open and access to the charge was provided from both sides). Andrei Dmitrievich looked inside, felt the structure, then sat down on a chair in the corner and thought in the pose of Rodin's "Thinker". He sat like that until 12 at night, then asked for a sheet of clean paper. Since there was no paper in the workshop, they offered him a clean sheet of plywood. On this plywood, the academician drew a sketch, where it was proposed to install lead belts 60 mm thick on the inner conical surface of the charge casing from the side of the initiator charges. I called the director of KB-11, B.G. Muzrukov, at 1 a.m.: "What to do, the shipment is in 36 hours?" Answer: "Do as Sakharov said!" At 6:00 a.m. in the workshop, designers draw "squirrels" and after 4 hours the lead belts are ready (from the memoirs of the head of the assembly shop of the KB-11 plant, A. G. Ovsyannikov).

40 years later, when, on the instructions of the director and first deputy scientific director of VNIIEF, academician of the Russian Academy of Sciences R.I. Ilkaev, calculations on the three-dimensional problem "Mimosa" were checked in the most powerful computing center in Russia at VNIIEF, it was confirmed that the absence of these lead belts would have led to a significant distortion of the sphere of radiation implosion and a decrease in the power of the explosion by ~ 80%. Thus, the academician's idea turned out to be much more advanced than the computers available at that time.



Coating the Tu-92-202 carrier aircraft with reflective paint (frames from an archival video from VNIIEF).

The AN602 product was prepared for the drop at the Olenya Long-Range Aviation base near the village of Vysokoe near Olenegorsk in the Murmansk region. The commander of the Tu-95-202 carrier crew was Major A.E. Durnovtsev. The test drop of a bomb with a thermonuclear explosion was performed on October 30, 1961. The drop occurred at an altitude of 10.5 thousand meters, the explosion - at an altitude of 4 km in the area of the Matochkin Shar Strait on Novaya Zemlya. The power of the explosion was 52.5 megatons of TNT equivalent. The scientific director of the project A.D. Sakharov received the third star of the Hero of Socialist Labor of the USSR for the successful test.



Explosion of the AN602 thermonuclear bomb on October 30, 1961 (USSR Ministry of Defense newsreel footage)

Consequences of the nuclear explosion of the AN602 bomb :

- the flash of the explosion was visible at a distance of more than 1000 km, it was observed in Norway, Greenland and Alaska;
- the nuclear mushroom cloud of the explosion rose to a height of 67 kilometers, the shape of the "hat" is two-tiered, the diameter of the upper tier is estimated at 95 kilometers, the lower - 70 km, the cloud was observed 800 km from the site of the explosion;
- the blast wave circled the globe three times, the first time in 36 hours 27 minutes;
- a seismic wave in the earth's crust, generated by the shock wave of the explosion, circled the globe three times;
- the atmospheric pressure wave resulting from the explosion was recorded three times in New Zealand: a station in Wellington (New Zealand) recorded an increase in pressure at 21:57 on October 30 (a wave coming from the northwest), at 07:17 on October 31 (from the southeast) and at 09:16 on November 1 (from the northwest; GMT) with amplitudes of 0.6, 0.4 and 0.2 millibars, respectively; the average speed of the wave was estimated at 303 m/s, or 9.9 degrees of great circle arc per hour;
- 780 km from the explosion in a village on Dikson Island, the glass in the windows was blown out;
- the sound wave generated by the explosion reached Dikson Island at a distance of about 800 kilometers, but there are no reports of destruction or damage to structures even in the urban-type settlement of Amderma, which is located much closer (280 km) to the test site;
- ionization of the atmosphere caused interference with radio communications even hundreds of kilometers from the test site for about 40 minutes;
- radioactive contamination of the experimental field with a radius of 2-3 km in the area of the epicenter was no more than 1 milliroentgen/hour, the testers appeared at the site of the explosion after 2 hours, the radioactive contamination posed practically no danger to the test participants.

Performance characteristics of the AN602 bomb :

Bomb length - 8.5 m
Diameter - 2 m
Weight of the equipped bomb - 26.5 t

Parachute system (parachute areas):

Parachute system weight - 1846 kg
- exhaust parachute - 0.5 sq.m
- brake parachutes that opened sequentially: one - 5 sq.m, three - 5 sq.m each, one - 40 sq.m, three - 40 sq.m each
- main parachute - 1600 sq.m

Charge : thermonuclear developed by KB-11 (VNIIEF), with a capacity of 100 Mt (detonated at 50% of its capacity). The thermonuclear charge was made using a "bifilar" scheme - the radiation implosion of the main thermonuclear block was carried out from two opposite sides. For this purpose, two two-stage thermonuclear initiator charges were placed in the front and rear parts of the bomb, for which synchronous detonation of the atomic initiators (triggers) was ensured with a difference of no more than 0.1 μ s. These charges produced an X-ray compression of the main thermonuclear charge. In order to ensure

synchronous detonation of the atomic initiator charges with the required accuracy, the serial automatic detonation unit was modified in KB-25 (now VNIIA).

Status : USSR - the munition was created as an experimental one and was not mass-produced.

Sources :

Veselovsky A.V. The Tsar Bomba is 50 years old. // Atomic Strategy. No. 60 / 2011.

[DISCUSS ON THE FORUM.....>](#)

© 2009-2015 militaryrussia.ru
Copying and use of materials
is permitted only with a link
to the corresponding article on the site



590



Rambler's
Top100



AviaTOP